BOOK REVIEW

Evolutionary Biology of the Bivalvia
edited by ***E.M. Harper, J.D. Taylor*** and ***J.A. Crame***

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Despite the implication of the title, this book is not a textbook, but a collection of 32 papers selected from among those presented at a meeting on the Biology and Evolution of the Bivalvia held at Cambridge, England, in September 1999. The editors and publishers are to be congratulated for such rapid publication after the meeting. The papers published here report the latest research from some of the most respected bivalve specialists. The book includes papers on classification, form and function, biogeography, ecology and phylogeny. It has two comprehensive indices, one for subjects and the other for taxa.

Owing to the diversity of the subjects, it is not possible to give more than a cursory review of what the volume contains. A feature of the book is the extensive editorial introduction which succeeds very well in tying the diverse papers together. The editors provide a short summary of each paper which gives the reader a good idea of the main thrust of each paper before going on to tackle the abstracts of the papers, or the papers themselves. DNA studies and cladistic analyses are a feature of a number of papers and the former in particular has proved to be and will continue to be a very powerful tool in sorting out relationships at all levels of classification.

The higher classification of the Bivalvia is dealt with in a number of papers. Molecular biological techniques are now being applied to molluscs and two such studies are included here. On the basis of these and other work reported it appears that the superfamilial and much of the ordinal classification of the bivalves hitherto based on shell morphology and anatomy has validity. Only the Myoidea seem to have a polyphyletic origin and should not be regarded as an order. It would seem that we are very close to common agreement on bivalve classification.

Two papers report studies undertaken in Australia on sperm morphology which can be used to provide phylogenetic characters. On the basis of sperm morphology, Arcoidea and Limopsoidea are not as closely related as previously supposed, whereas Ostreoidea and Limoidea are, as also Pterioidea, Pinnoidea and Pectinoidea. The sperm of giant clams supports a close relationship with cardiids confirming previous studies that the family Tridacnidae should not be regarded as a family but as a subfamily of the Cardiidae.

Pectinid eyes are the subject of another paper. Contrary to popular belief, they do not seem to used to avoid predators. Just what is their function, has yet to be discovered.

A particularly interesting study of function and form in lucinids indicated that they harbour sulphide-oxidising, chemosymbiotic bacteria and have adapted their internal structures to separate oxygen rich water for respiration

from sulphide bearing water used by the resident bacteria for chemosynthesis. Evidence of these features is present on fossil lucinids extending back to at least the Silurian.

A biogeographical paper analysing latitudinal and longitudinal gradients of taxa shows that gradients are not uniform as previously thought. Of particular interest to Australians is the revelation of the high biodiversity of Australia, regarded as a biodiversity 'hot spot'. Such broad brush studies rely very much on the literature for local faunal lists to provide data for analysis, the quality of which can vary. This is starkly demonstrated by a local study on the Florida Keys which found after on site collecting and searching through museum collections that only 73% of the fauna had been reported in the literature.

This is a book for the specialist but given the cost will only be found in institutional libraries.

Thomas A. Darragh
Museum Victoria
PO Box 666E
Melbourne, Victoria 3001